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A PRELIMINARY REVISION OF THE BOMBYCES OF AMERICA NORTH OF MEXICO.

BY B. NEUMOEGEN AND HARRISON G. DYAR.

(CONTINUED FROM VOL. I, PAGE 180)

Genus *Spilosoma* *Stephens*.

1828—*Spilosoma* STEPHENS, Ill. Brit. Ent., Haust., Vol. II, p. 74.

Synopsis of species.

Fore wings square at tip.

Abdomen spotted.

Primaries white **virginica.**

Primaries faintly ochraceous **prima.**

Abdomen immaculate white **latipennis.**

Fore wings, acuminate, outer margin more oblique.

Legs yellow at base **antigone.**

Legs red at base.

Abdomen black spotted **vestalis.**

Abdomen immaculate white *var* **amelaina.**

S. virginica *Fabricius*.

1798—*Bombyx virginica* FABRICIUS, Nat. Syst. Suppl., p. 437.

var. dubia *Walker*.

1855—*Cyenia dubia* WALKER, Cal. Brit. Mus., pt. III, p. 682.

1893—*Spilosoma virginica var. dubia* DYAR, Can. Ent., Vol. XXV, p. 180.

White with black discal dot on primaries and sometimes submarginal ones on secondaries. Abdomen ochereous subdorsally with black dorsal and lateral spots. Fore coxæ and femora ochraceous. Expanse, 38—50 mm. — In the aberration *dubia* the wings are mouse gray with whitish veins.

Habitat, Atlantic States westward to Pacific Northwest.

S. prima *Slosson*.

1889—*S. prima* SLOSSON, Ent. Amer., Vol. V, p. 40.

White, but somewhat sordid or yellowish with scattered dots of dark brown. The fore tibiæ more smoky than in *virginica* which this insect closely resembles.

Habitat, Northern New York and New England northward.

S. antigone *Strecker*.

1878—*S. antigone* STRECKER, Rep. Chief Eng. Ruffner, App. ss., p. 1860;
1889—SMITH, Ent. Amer., Vol. V, p. 119.

White, fore tibiæ ochraceous. On fore wings is a black discal dot and occasionally a few dark brown dots, forming an outer band. Expanse, 45—50 mm.

Habitat, Atlantic States to Rocky Mountains.

S. latipennis *Stretch*.

1872—*S. latipennis* STRETCH, Zyg. and Bomb. N. A., p. 133.

White, fore tibiæ red. Pectinations of antennæ, and eyes black. Expanse, 40 mm.

Habitat, Atlantic States.

S. vestalis *Packard*.

1864—*S. vestalis* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 125.

var. **amelaina** *Dyar*.

1893—*S. vestalis* *var. amelaina* DYAR, Psyche, Vol. VI, p. 512.

White, fore tibiæ red. Abdomen with dorsal and lateral black spots. Fore wings with a variable number of black dots especially along costa and in an outer band. Expanse, 45—55 mm. The *var. amelaina* has the abdominal spots partly or wholly wanting.

Habitat, California and Pacific Northwest.

Genus **Elpis** *Dyar*.

1893—*Elpis* DYAR, Ent. News, Vol. IV, p. 36.

Synopsis of species.

Stalk of antennæ and thorax with red hairs.

Fore wings brown with red tint **rubra.**

Red predominating *var.* **walsinghami.**

Brown largely predominating *var.* **danbyi.**

Stalk of antennæ whitish, thorax pale brown or russet.

Secondaries partly or largely blackish **vagans.**

Secondaries pale *var.* **rufula.**

E. rubra *Neumoegen*.

1881—*Antarctia rubra* NEUMOEGEN, Pap., Vol. I, p. 79.

var. walsinghami Butler.

1881—*Antarctia walsinghami* BUTLER, Ann. Nat. Hist., Vol. VIII, p. 311.

var. danbyi Neumoegen & Dyar.

1893—NEUMEGEN & DYAR, Ent. News, Vol. IV, p. 141.

Thorax red, or brown with a red tinge (*var. danbyi*). Fore wings brown with red tinge or largely red (*var. walsinghami*) with a blackish discal dot. Secondaries black, wings thinly scaled, subtranslucent. Expanse, 30 mm.

Habitat, Pacific Northwest.

E. vagans Boisduval.

1852—*Arctia vagans* BOISDUVAL, Ann. Ent. Soc. France, (2), Vol. X, p. 322.

1875—*Spilosoma pteridis* HY. EDWARDS, Proc. Cal. Acad. Sci., Vol. V, p. 265.

var. rufula Boisduval.

1855—*Nemophila rufula* BOISDUVAL, Bull. Soc. Ent. France (3), Vol. III, p. 32.

1864—*Antarctia punctata* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 123.

1881—*Antarctia proba* HY. EDWARDS, Pap., Vol. I, p. 39.

Male; drab, sprinkled with black scales with black discal dots, Secondaries often largely or wholly black. Female brownish red with irrorations and markings as in the ♂. Expanse, 35 mm.

Habitat, California.

Genus **Neoarctia** Neumoegen & Dyar.

1893—*Neoarctia* NEUMEGEN & DYAR, Ent. News., Vol. IV, p. 141.

Synopsis of species.

Dark brown, marks indistinct **beanii.**
 Black, marks distinct **brucei.**

N. beanii Neumoegen.

1891—*Antarctia beanii* NEUMEGEN, Can. Ent., Vol. XXIII, p. 123.

var. fuscosa Neumoegen.

1891—*A. beanii* *var. fuscosa* NEUMEGEN, Can. Ent., Vol. XXIII, p. 124.

Chocolate brown, abdomen reddish laterally. Fore wings subtranslucent, with a basal band and costal patch, outer transverse and angular terminal bands of pinkish color, faintly marked or absent (*var. fuscosa*). Secondaries pinkish with mesial and submarginal brown bands. Expanse, 35 mm.

Habitat, Northern Rocky Mountains.

N. brucei Hy. Edwards.

1888—*Arctia brucei* HY. EDWARDS, Ent. Amer., Vol. III, p. 183.

Black; collar and end of abdomen reddish flesh color. Fore wings with sub-basal and transverse posterior bands, a rounded, triangular costal spot, and occasionally a terminal **w**-mark of same color. **W**-mark irregular, often absent. Secondaries pale red, with median and outterrow of confluent black spots, the median sometimes wanting. Expanse, 35 mm.

Habitat, Colorado.

Genus *Platarctia* Packard.

1864—*Platarctia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 109.

Synopsis of species.

Size large; primaries brown. **hyperborea.**
 Smaller, primaries black.
 Markings lemon yellow; basal half of secondaries black **yarrowi.**
 Markings buff; secondaries black only at base *var.* **remissa.**

P. hyperborea Curtis.

1835—*Euprepia hyperboreus* CURTIS, Ross, 2nd Voy. App., p. 271.

1850—*Arctia parthenos* HARRIS, Agassiz Lake Sup., p. 390.

1860—*Arctia borealis* MÖSCHLER, Wiener Ent. Monat., Vol. IV, p. 360.

Fore wings dark brown with blackish shade. Several small white spots, especially along costa and submedian fold, representing the usual bands. Secondaries ocher yellow, sub-median band and discal spot connected by rays with a large basal black patch. Abdomen black with ocher yellow tip; collar red behind, patagia white-lined. Expanse, 70 mm.

Habitat, Mountains of New England northward.

P. yarrowi Stretch.

1874—*Arctia yarrowi* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 221;

1893—BEAN, Psyche, Vol. VI, p. 523.

var. remissa Hy. Edwards.

1888—*Arctia remissa* HY. EDWARDS, Ent. Amer., Vol. III, p. 184.

Primaries black; three square yellow patches on costa, and three similar ones on internal margin; a transverse band from costa to internal angle and an angular subapical mark, which are traces of the broken up **w**-mark. Secondaries black at base, red outwardly, with rounded black submarginal and discal spots. Body black, red at tip. Expanse, 44 mm.

Habitat, Rocky Mountain region of Canada to Hudson's Bay, Arizona, Wyoming, Vancouver Is., B. C.

Genus *Arctia* Schrank.

1802—*Arctia* SCHRANK, Fauna Boica, Vol. II (2), p. 151.

1822—*Épicallia* HÜBNER, Verz. bek. Schmett., p. 182.

A. virginalis Boisduval.

1852—*Arctia virginalis* BOISDUVAL, Ann. Soc. Ent. Fr. (2), Vol. X, p. 321.

var. *guttata* Boisduval.

1852—BOISDUVAL, Ann. Soc. Ent. Fr. (2), Vol. X, p. 321.

var. *ochracea* Stretch.

1872—STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 71.

Thorax and primaries black. Head, a spot on back of thorax, abdomen and secondaries orange ochraceous. Dorsal transverse bands on abdomen, and two bands with discal and marginal spots on secondaries black. On fore wings, five bands of large well rounded spots, the outer band waved. A yellow spot on patagia. In the var. *guttata* the secondaries are nearly entirely black. Expanse, 50—60 mm.

Habitat, California and the Pacific Northwest to the Rocky Mountains.

Genus *Eyprepia* Ochsenheimer.

1810—*Eyprepia*, OCHSENHEIMER, Schmett. Eur., Vol. III, p. 299.

1855—*Apantesis* WALKER, Cal. Brit. Mus., pt. III, p. 331.

1854—*Callarctia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 114.

1866—*Cymbalophora* RAMBUR, Cat. Lep. And., Vol. II, p. 231.

1886—*Orodemnias* WALLENGREN, Skand. Heter., Vol. II, p. 315.

Synopsis of groups. *

Veins of primaries pale lined, linings rarely obsolete in one species.

Size medium to large, vestiture of wings opaque.

Terminal **w**-mark present, the fourth transverse line either straight or but slightly angulated **Callarctia.** -

Terminal **x**-mark, formed of the terminal **w** and the strongly angulated fourth line **Mimarctia.** † ^{n r 2}

Size small, vestiture subdiaphanous; lines somewhat confused. **Orodemnias.** -

Veins not lined.

Terminal **w**-mark **Cymbalophora.** -

Terminal **x**-mark **Apantesis.** -

* The normal thorax, in this genus, is yellowish with two black stripes on collar and three on thorax. We have indicated the bands on the fore wings as follows: — band 1, sub-basal half band, resting on costa; band 2, transverse anterior band; band 3, median band; band 4, transverse posterior band, immediately adjoining band 5, the angular terminal or **w**-mark. A longitudinal band along submedian fold, joining the angular terminal and forming with it a furcation above internal angle.

GROUP CALLARCTIA *Packard*.1864—*Callarctia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 114.*Synopsis of species.*

Linings of veins broad, especially along the median vein.

Size large; one or two incomplete transverse bands besides the **w**-mark.Hind wings red **virgo.**Hind wings yellow *var.* **citrinaria.**

Size smaller.

Hind wings yellow.

No transverse bands except the **w** **virguncula.**Trace of one or more of these bands *var.* **otiosa.**

Hind wings pink; linings of veins very broad.

Pale marks pinkish **michabo.**Of a deeper color, more reddish *var.* **minea.**

Lining on median vein narrow, confined to the vein.

Secondaries red, without any tendency to melanism; marginal spots rarely confluent.

Size large; primaries usually with three transverse bands.

Only two transverse bands present **intermedia.**Three transverse bands present *var.* **stretchii.**

Size smaller with two or less bands.

Third line broken or absent; fourth seldom rigid.

Third and fourth lines present **parthenice.**Third line absent, fourth broken *var.* **approximata.**Third and fourth lines present, rigid, parallel **rectilinea.**

Secondaries yellow or orange red with a strong tendency to melanism; rarely intirely black; marginal spots often confluent, basal spots often present.

Hind wings entirely black **anna.**Hind wings yellow, with even black border *var.* **persephone.**

Hind wings yellow or red, lightly or heavily spotted or nearly entirely black. Basal spots present in well marked specimens.

Three or four bands on primaries (full maculation)

Veins indistinctly lined or not lined at all **ornata.**Veins narrowly lined *var.* **achaia.**Less than three bands on primaries, sometimes but one; but **w**-marks present *var.* **complicata.****E. virgo** *Linnæus*.1758—*Bombyx virgo* LINNÆUS, Syst. Nat., Vol. I, p. 501.*var.* **citrinaria** *Neumægen & Dyar*.1893—*Euprepia virgo var. citrinaria* NEUMÆGEN & DYAR, Ent. News, Vol. IV, p. 142.Fore wings black; all the margins, veins and longitudinal stripes, pinkish cream color. The terminal **w**-mark is distinct, the transverse posterior (4th) line reaches from costa to stripe, angu-

lated slightly on median vein. The median (3rd) line usually reaches from costa to median vein but it may project below median vein or be absent. Rarely the 4th line is partly absent. Secondaries vermilion red with double marginal row of subtriangular black spots and two to five discal spots. Thorax normal; abdomen red with dorsal and lateral black spots. The var. *citrinaria* differs only in the color of secondaries. Expanse, 35—50 mm.

Habitat, Atlantic States westward.

E. *virguncula* Kirby.

1837—*Callimorpha virguncula* KIRBY, Richardson Fauna Bor. Amer., Vol. IV, p. 304.

var. *otiosa* Neumegen & Dyar.

1893—*Euprepia virguncula* var. *otiosa* NEUMEGEN & DYAR, Ent. News., Vol. IV, p. 142.

Smaller than *virgo*, all the transverse lines except the w-mark absent. Secondaries and abdomen dark ocher yellow, the former with double marginal row of spots, one discal spot, and a series of basal streaks which may become extended and fuse with the enlarged spots rendering the wing largely black. The dorsal abdominal spots are fused into a band. Expanse, 30—40 mm.

Habitat, Northern Atlantic States westward.

The var. *otiosa* has slight traces of one or more of the normal transverse lines.

E. *michabo* Grote.

1875—*Arctia michabo* GROTE, Can. Ent., Vol. VII, p. 196.

var. *minea* Slosson.

1892—*A. minea* SLOSSON, Ent. News., Vol. III, p. 257.

Pale marks flesh cream color, line 3 oblique, in cell from costa to median vein: line 4 slightly angulated, sometimes almost forming an irregular x with w-mark. W broad. Veins lined, that on median broader than the vein, but only slightly so, approaching the *parthenice* group. Apex of primaries pointed. Secondaries flesh red, pale in ♂; one to four discal, submarginal and marginal black spots. Secondaries tend to be subtranslucent recalling *arge* which the species also approaches in wing shape, but it has not the x-mark so well developed. Expanse, 43 mm.

Habitat, Atlantic States westward.

E. *intermedia* Stretch.

1874—*Arctia intermedia* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 216.

1878—*Arctia cithona* STRECKER, Lep. Roph. and Hel., p. 131.

var. stretchii Grote.

1881—*A. stretchii* GROTE, Can. Ent., Vol. VII, p. 197.

Like *parthenice* but larger. On primaries, 2nd, 3rd and 4th lines from costa to longitudinal stripe, or to internal margin, or exactly like *parthenice*. Expanse, 50 or more mm.

Habitat, Southern Atlantic States from New York to Texas.

E. parthenice Kirby.

1837—*Callimorpha parthenice* KIRBY, Rich. Fauna Bor. Amer., Vol. IV, p. 303.

1864—*Arctia saundersii* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 75.

var. approximata Stretch.

1885—STRETCH, Ent. Amer., Vol. I, p. 104.

Fore wings marked as in *virgo* except that the median vein is only narrowly lined with pale. The median line (3) often reaches from costa to longitudinal stripe, but it may be entirely absent. The transverse posterior (4th) line is less strongly angulated than in *virgo*, rarely partly absent, giving the variety *approximata*. Secondaries red with double marginal row and one discal spot. Expanse, 30—35 mm.

Habitat, Northern New York and New England to Canada.

E. rectilinea French.

1879—*Arctia rectilinea* FRENCH, Can. Ent., Vol. XI, p. 45.

Differs from *parthenice* only in the obliquity of the two transverse lines which are present. The median (3rd) line runs from costa to median vein at origin of vein 2, while the transverse posterior (4th) line is straight, not angulated at median vein. The lines are thus parallel and do not converge as in *parthenice*.

Habitat, Mississippi Valley, rare in the Atlantic States.

E. anna Grote.

1863—*Arctia anna* GROTE, Proc. Ent. Soc. Phil., Vol. II, p. 335.

var. persephone Grote.

1863—*A. persephone* GROTE, Proc. Ent. Soc. Phil., Vol. II, p. 433.

Veins narrow lined, linear. Longitudinal stripe, 4th line and w-mark present; also 3rd line from sub-costal to median veins, or reduced, or absent. Secondaries ochreous, with discal dot and broad black border, or all black. Abdomen ochreous with black dorsal and lateral bands or entirely black. Expanse, 40—45 mm.

Habitat, Atlantic States.

E. ornata Packard.

- 1864—*Callartia ornata* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 115.
- 1881—*Arctia simplicior* BUTLER, Ann. and Mag. N. H. (6), Vol. VIII, p. 311.
- 1893—*Arctia blakei* var. *perpicta* DYAR, Psyche, Vol. VI, p. 381.

var. **achaia** Grote & Robinson.

- 1868—*Arctia achaia* GROTE & ROBINSON, Trans. Amer. Ent. Soc., Vol. I, p. 334.
- 1872—*Arctia edwardsii* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 77.

var. **complicata** Walker.

- 1864—*Arctia complicata* WALKER, Cat. Brit. Mus., pt. XXXI, p. 279.
- 1868—*Arctia dahurica* GROTE, Trans. Amer. Ent. Soc., Vol. I, p. 336.
- 1872—*Arctia othracea* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 125.
- 1881—*Arctia barda* HY. EDWARDS, Papilio, Vol. I, p. 39.

Fore wings black; linings of veins narrow, variable in distinctness, being absent in the form *ornata*, present in *achaia*. The complete transverse maculation is present, but variable, the basal half line disappearing first, followed by the transverse anterior and median lines, producing the form *complicata*. Secondaries deep ocher yellow, orange or red, with double marginal spots, and one discal, besides two basal streaks which are usually very distinct. The spots very much in size, often spreading and becoming confluent, covering the whole wing except for an irregular central area. Expanse, 30—35 mm.

Habitat, California and the Pacific Northwest.

GROUP MIMARCTIA *Neumegen & Dyar.*

Synopsis of species.

- Three transverse bands more or less complete besides the angular terminal band **arge.**
- Three bands absent, and also the angular terminal, either absent or reduced var. **nervosa.**

E. arge Drury.

- 1773—*Noctua arge* DRURY, Ill. Ex. Ent., Vol. I, pl. 18, f. 3.
- 1775—*Bombyx dioue* FABRICIUS, Syst. Ent., p. 572.
- 1781—*Noctua incarnatorubra* GOEZE, Ent. Beytr., Vol. III (3), p. 241.
- 1797—*Bombyx coelebs* MARTYN, Psyche, pl. II, f. 25.
- 1869—*Chelonia nereia* BOISDUVAL, Ann. Soc. Ent. Belg., Vol. XII, p. 77.
- 1869—*Chelonia doris* BOISDUVAL, Ann. Soc. Ent. Belg., Vol. XII, p. 77.

var. **nervosa** *Neumegen & Dyar.*

- 1893—*Euprepia arge* var. *nervosa* NEUMEGEN & DYAR, Ent. News., Vol. IV, p. 142.

Pale marks pinkish cream color, broad, predominating. Lines 2 to 4 and w mark present. Lines 2 and 3 cross the cell only, and project triangularly from costa and median vein respectively.

Line 3 is bent at right angles on median vein, forming terminal x-mark with the central limbs of the **w**. Secondaries whitish in ♂, pale salmon red in ♀, with marginal and submarginal rows and one discal black spot but reduced in size and broken by the veins. Abdomen cream color, the spots small. Expanse, 35—40 mm.

Habitat, Atlantic States westward to California.

GROUP ORODEMNIAS *Wallengren*.

1886—*Orodemnias* WALLENGREN, Skand. Het., Vol. II, p. 315.

Synopsis of species

Secondaries yellowish white.

Pale maculations of fore wings extensive **quenselii**.

Maculations reduced var. **speciosa**.

Secondaries red **obliterata**.

E. quenselii *Paykull*.

1791—*Bombyx quenselii* PAYKULL, Act. Hafn., Vol. II, p. 99.

1793—*Bombyx strigosa* FABRICIUS, Ent. Syst., Vol. III (1), p. 454.

1849—*Euprepia gelida* MÖSCHLER, Steil. Ent. Zeit., Vol. IX, p. 174.

var. **speciosa** *Möschler*.

1864—*Arctia speciosa* MÖSCHLER, Wien. Ent. Monat., Vol. VIII, p. 105.

Black; secondaries of ♂ largely black with paler shadings, of ♀ partly and irregularly yellow. Primaries of ♂ with the veins narrowly lined; bands 3 to 4 present from sub-costal to median veins, narrow, reduced, irregular. **W**-mark irregular. In ♀, the marks are broader, confused, light yellow. Bands 2, 3 and 4 present from sub-costal to median vein. **W**-mark blurred. Expanse, 30—35 mm.

Habitat, Arctic regions.

E. obliterata *Stretch*.

1885—*Arctia obliterata* STRETCH, Ent. Amer., Vol. I, p. 105.

Thorax normal, abdomen yellowish, normal. Primaries blackish brown. Costa, fringes and inner margin, veins, longitudinal stripe, terminal **w**-mark and costal half of 4th band, pale yellow. Traces of median band. Secondaries dull red, the black spots present as marginal, submarginal and discal ones. Expanse 33 mm.

Habitat, unknown.

GROUP CYMBALOPHORA *Rambur*.

1866—*Cymbalophora* RAMBUR, Cat. Lep. And., Vol. II, p. 231.

Synopsis of species.

- Tip of abdomen black, dorsal spots reduced.
 Secondaries of ♂ whitish with black spots **proxima.**
 Secondaries without black spots *var.* **autholea.**
 Dorsal abdominal spots moderate, the terminal one not larger.
 Primaries with normal maculation.
 Three or more transverse lines beside the **w**-mark.
 Size small.
 Fore wings black **cervinoides.**
 Fore wings brown **bolanderi.**
 Size moderate.
 Hind wings of ♂ pink.
 Thorax normal **blakei.**
 Thorax black *var.* **nevadensis.**
 Hind wings yellow' *var.* **sulphurica.**
 Hind wings deep red.
 Four lines present, narrow, normal **superba.**
 Lines broad, blurred, red centered **favorita.**
 Two or less transverse lines; rarely traces of three
 Fore wings brown.
 One line beside **w**-mark **williamsii.**
 Two or three lines *var.* **determinata.**
 Fore wings black.
 Hind wings red.
w-mark present **phyllira.**
w-mark absent *var.* **figurata.**
 Hind wings partly yellow *var.* **celia.**
 Hind wings black *var.* **excelsa.**
 Primaries with the maculation broken into a series of spots;
 often largely black.
 Hind wings with a black border.
 A few pale dots on fore wings **placentia.**
 Many pale dots *var.* **flammea.**
 Hind wings largely black *var.* **snowi.**

E. proxima Guérin.

- 1844—*Chelonia proxima* GUÉRIN, Icon. R. Amer., Vol. II, p. 514.
 1855—*Euprepia docta* WALKER, Cat. Brit. Mus., Vol. III, p. 592.
 1867—*Arctia mexicana* GROTE & ROBINSON, Ann. Lyc. N. Y., Vol. VIII,
 p. 367.
 1874—*Arctia arizonensis* STRETCH, Zyg. & Bomb. N. A., p. 217.
 1885—*Arctia mormonica* NEUMEGEN, Ent. Amer., Vol. I, p. 93.

var. **autholea** Boisduval.

- 1869—*Chelonia autholea* BOISDUVAL, Ann. Soc. Ent. Belg., Vol. XII, p. 76.

Head and thorax ochre yellow, collar immaculate, thorax with the three normal black stripes. Abdomen vermilion above, the dorsal spots very small, but terminal segment entirely black. Veins

of primaries not lined with pale scales, except the median which is narrowly and continuously lined. Longitudinal streak, 2nd to 4th lines, and terminal w-mark present, often very broad and reducing the black ground to angular spots. The 3rd and 4th lines may become confluent laterally, or rarely, the 2nd and 3rd lines become so. Less often the black predominates, the 2nd line (transverse anterior) and even part of the 3rd (median) line, disappearing. Secondaries whitish in ♂ with pink abdominal border: deep red in ♀ with marginal and 1 to 3 discal dots. These dots are absent in the ♂ of the form *autholea*. Expanse, 35—45 mm.

Habitat, region west of the Rockies to Southern California and Mexico.

E. cervinoides *Strecker*.

1876—*Arctia cervinoides* STRECKER, Proc. Acad. Phil., p. 151.

Black, thorax normal, but black bands very wide. Secondaries with discal spot, marginal border and basal streaks pale black on whitish ground. Primaries brownish black, longitudinal band, w-mark, 2nd, 3rd and 4th bands present, and traces of 1st but variable, sometimes extending entirely across wing. Expanse, 22 mm.

Habitat, Colorado.

E. bolanderi *Stretch*.

1872—*Arctia bolanderi* STRETCH, Zyg. and Bomb. N. A., p. 76.

Thorax and abdomen normal; primaries brown with three transverse bands more or less well developed; the w-mark and longitudinal band present. Secondaries yellow or red with normal spottings present, one discal dot and traces of other marks. Size small. Expanse, 30 mm.

Habitat, Rocky Mountains and Sierra Nevada.

E. blakei *Grote*.

1864—*Arctia blakei* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 523.

1881—*Arctia incornupta* IV. EDWARDS, Papilio, Vol. I, p. 38.

1889—*Arctia shastaensis* FRENCH, Can. Ent., Vol. XXI, pp. 35, 162.

var. nevadensis *Grote & Robinson*.

1866—*Arctia nevadensis* GROTE & ROBINSON, Proc. Ent. Soc. Phil., Vol. VI, p. 1

1872—*Arctia behrii* STRETCH, Zyg. and Bomb. N. A., p. 75.

var. sulphurica *Neumogen*.

1885—*Arctia nevadensis* var. *sulphurica* NEUMÖGEN, Ent. Amer., Vol. I, p. 93.

1883—*Arctia ochracea* NEUMÖGEN, Papilio, Vol. III, p. 151.

1885—*Arctia elongata* STRETCH, Ent. Amer., Vol. I, p. 105.

Thorax with normal maculation or entirely black (var. *nevadensis*). Median vein not pale lined, the longitudinal line and all the transverse bands present. The lines vary much in width, but have a greater tendency to be narrow than in *proxima*. Secondaries pink in the ♂, rarely yellow (var. *sulphurica*), red in the ♀ with double marginal and one to three discal dots, the latter rarely produced towards the base. Abdomen pink or ocher, the dorsal and lateral spots moderate, even throughout, not different on the terminal segments. Expanse, 30—35 mm.

Habitat, Rocky Mountain region west to the Pacific.

E. superba *Stretch*.

1874—*Arctia superba* STRETCH, Zyg. and Bomb. N. A., p. 227.

1878—*Arctia geneura* STRECKER, Proc. Dav. Acad. Sc., Vol. II, p. 270.

Lines, as in *blakei*, but narrow and partly broken. Secondaries deep red but in some specimens much like *blakei*.

Habitat, Colorado, British Columbia.

E. favorita *Neumagen*.

1890—*Arctia favorita* NEUMEGEN, Ent. Amer., Vol. VI, p. 173.

Like *blakei*, but line 1 absent, or but a trace left. Primaries black, but looking slightly brownish. Lines broad, confluent or normal, or all absent but lines 3 and 4. This form differs from *williamsii* only in being more black, and having the secondaries redder. It is very close to *superba*.

Habitat, Rocky Mountain region.

E. williamsii *Dodge*.

1871—*Arctia williamsii* DODGE, Can. Ent., Vol. III, p. 167.

var. **determinata** *Neumagen*.

1881—*Arctia determinata* NEUMEGEN, Pap., Vol. I, p. 28.

1890—*Arctia dieckii* NEUMEGEN, Ent. Amer., Vol. VI, p. 62.

Primaries brown with black shades; secondaries dark red inclining to pinkish. On primaries, the longitudinal band and w-mark with one or two other bands. In the var. *determinata* two bands are present, the 3rd and 4th.

Habitat, Rocky Mountain region.

E. phyllira *Drury*.

1773—*Callimorpha phyllira* DRURY, Ill. Ex. Ent., Vol. I, pl. 7, f. 2.

1781—*Geometra B-ata* GÖEZE, Ent. Betyr., Vol. III (3), p. 428.

1797—*Bombyx plantagina* MARTYN, Psyche, pl. 15, ff. 36-7.

1881—*Arctia dodgei* BUTLER, Ent. Mo. Mag., Vol. XVIII, p. 136.

var. figurata Drury.1773—*Bombyx figurata* DRURY, Ill. Ex. Ent., Vol. II, p. 12.1822—*Euplagia ceramica* HÜBNER, Verz. bek. Schmett., p. 180.1878—*Arctia f-pallida* STRECKER, Rep. Chief Eng. 1878, App. ss, p. 1860.*var. celia* Saunders.1863—*Arctia celia* SAUNDERS, Proc. Ent. Soc. Phil., Vol. II, p. 59.1888—*Arctia franconia* HY. EDWARDS, Ent. Amer., Vol. III, p. 184.*var. excelsa* Neumögen.1883—*Arctia excelsa* NEUMÖGEN, Pap., Vol. III, p. 70.1887—*Arctia lugubris* HULST, Ent. Amer., Vol. II, p. 182.

Thorax normal, abdomen red with normal spots. Primaries black, longitudinal stripe, lines 3—4, and w-mark moderate, cream colored. Lines 3 and 4 divergent or parallel, from costa to stripe. Secondaries red; discal, marginal, and submarginal spots present, variable, sometimes confluent and covering nearly the whole wing. Expanse, 40 mm.

Habitat, Southern States, rare in New York and New England.

E. placentia Smith & Abbott.1797—*Phalena placentia* SMITH & ABBOTT, Lep. Ins. Ga., Vol. II, pl. 65.*var. snowi* Grote.1875—*Arctia snowi* GROTE, Can. Ent., Vol. VII, p. 197.1878—*Arctia quadranotata* STRECKER, Proc. Dav. Acad. Sc., Vol. II, p. 271.*var. flammea* Neumögen.1881—*Arctia flammea* NEUMÖGEN, Pap., Vol. I, p. 9.

Thorax and primaries black: secondaries red with normal discal and marginal spots, to all black. Abdomen red, with dorsal and lateral bands. On primaries, a discal flesh red spot (of band 3) or part of band 4 or traces of w-mark, all broken by veins.

Habitat, Southern States to Mississippi Valley.

GROUP APANTESIS Walker.

1855—*Apantesis* WALKER, Cal. Brit. Mus., pt. III, p. 331.*Synopsis of species.*

Costal margin of primaries black	nais.
Costal margin yellow.	
Abdomen rosy red, marks of primaries usually complete	phalerata.
Abdomen yellow, often largely black; marks partly absent	vittata.

E. nais Drury.1773—*Noctua nais* DRURY, Ill. Ex. Ent., Vol. I, pl. 7, f. 3.1781—*Bombyx cuneata* GOEZE, Ent. Betyr., Vol. III (3), p. 65.1797—*Bombyx defloriana* MARTYN, Psyche, pl. 28, ff. 78—9.1881—*Arctia ochreatea* BUTLER, Ent. Mo. Mag., Vol. XVIII, p. 136.

Thorax normal, or more often collar immaculate. Abdomen ocher yellow with dorsal and lateral black bands widest centrally. Fore wings black, a stripe near costa and longitudinal band present; transverse posterior line and terminal w-mark also present, the former bent at right angles and usually its lower limb fused with the line on median vein. It does not extend below the longitudinal stripe. Markings often become obsolete from without inwards, the w-mark disappearing first. Secondaries pale ocher, rarely partly pinkish with double marginal row and one discal spot. Expanse, 25—30 mm.

Habitat, Atlantic States westward

E. phalerata *Harris*,

1841—*Arctia phalerata* HARRIS, Ins. Mass., p. 274.

1881—*Arctia rhoda* BUTLER, Ent. Mo. Mag., Vol. XVIII. p. 136,

1881—*Arctia incompleta* BUTLER, Ann. Mag. N. H. (5), Vol. VIII, p. 311.

Thorax normal, abdomen red, rarely yellow, marked like *nais*. Fore wings as in *nais* except that the costal stripe reaches the costa and the w-mark is only very rarely at all incomplete. Secondaries pink in ♂, especially along abdominal border, rarely entirely ocherous; red in ♀; the black marks as in *nais*, but sometimes very small or absent.

Habitat, Atlantic States westward.

E. vittata *Fabricius*,

1787—*Bombyx vittata* FABRICIUS, Mant. Ins., Vol. II, p. 127.

1855—*Apantesis radians* WALKER, Cat. Brit. Mus., pt. III, p. 632.

1863—*Arctia decorata* SAUNDERS, Proc. Ent. Soc. Phil., Vol. II, p. 60.

1864—*Aloa colorata* WALKER, Cat. Brit. Mus., pt. XXXI, p. 301.

Marked like *nais* except that the costal band reaches the costa. The black abdominal bands are broad and frequently cover most of the abdomen. Hind wings ocher or red, the spots as in *nais* but often form a complete broad black border. Expanse, 30—35 mm.

Habitat, Atlantic States.

Genus **Kodiosoma** *Stretch*.

1872—*Kodiosoma* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 67.

Synopsis of species.

Secondaries black.

Abdomen yellow at tip **nigra.**

Abdomen black throughout **eavesii.**

Secondaries red at base **tricolor.**

Secondaries yellow at base **fulva.**

K. nigra *Stretch*.1872—*K. nigra* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 68.

Black, thinly scaled, prothorax, anal tuft, costa of primaries and a faint oblique transverse band, yellow. Expanse, 22 mm.

Habitat, California [Stretch].**K. cavesii** *Stretch*.1872—*K. cavesii* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 69.

Black, wings translucent centrally. Prothorax, costal edge, and a faint or partly obsolete band, furcate toward costa; pale yellow. Expanse, 22 mm.

Habitat, Nevada, California.**K. tricolor** *Stretch*.1871—*K. tricolor* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 67.

Black; secondaries clear red except at margin. Prothorax, base of costa and a transverse band on primaries pale yellowish. Abdomen red above, black at tip. Expanse, 25 mm.

Habitat, Nevada [Stretch].**K. fulva** *Stretch*.1872—*K. fulva* STRETCH, Zyg. and Bom. N. A., Vol. I, p. 67.

Black; secondaries pale buff for basal two-thirds. Prothorax, tip of abdomen, costal edge and a narrow, angulated, transverse band on primaries, pale buff. Expanse, 23 mm.

Habitat, California.Genus **Parasemia** *Hübner*.1822?—*Parasemia* HÜBNER, Verz. bek. Schmett., p. 121.1828—*Nemcophila* STEPHENS, Ill. Brit. Ent. Haust., Vol. II, p. 12.1865—*Eupsychoma* GROTE, Proc. Ent. Soc. Phil., Vol. IV, p. 317.*Synopsis of varities.*

Hind wings black and white.

A discal dot on fore wings **petrosa.**No discal dot var. **geddesi.**Hind wings black and yellow or reddish var **modesta.**

Hind wings black.

A discal dot on fore wings var. **geometrica**No discal dot var. **scudderi.****P. petrosa** *Walker*.1855—*Nemcophila petrosa* WALKER, Cat. Brit. Mus., Vol. III, p. 626.var. **geddesi** *Neumögen*.1884—*N. geddesi* NEUMÖGEN, Pap., Vol. III, p. 137.

var. modesta Packard.1864—*Platarctia modesta* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 113.1868—*Nemophila caespitis* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 337.1868—*Nemophila chiorii* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 338.*var. geometrica* Grote.1865—*Eupsychoma geometrica* GROTE, Proc. Ent. Soc. Phil., Vol. IV, p. 318.*var. scudderii* Packard.1864—*Platarctia scudderii* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 113.1885—*Nemophila schwynii* HY. EDWARDS, Can. Ent., Vol. XVII, p. 65.

Black; collar, except black central dot, and base of costa, buff; a longitudinal band, oblique sub-apical band and discal dot with traces of another near apex, white or yellow, or absent. Secondaries white, red, or yellow, or partly or wholly black. Expanse, 35 mm.

Habitat, Mountains of Colorado and California to Canada and British Columbia.

Genus *Hypercompa* Hübner.1805?—*Hypercompa* HÜBNER, Tentamen, p. 1.1822—*Zoete* HÜBNER, Verz. bek. Schmett., p. 181.**H. caja** Linneus.1758—*Bombyx caja* LINNEUS, Syst. Nat., Vol. I, p. 500.*race americana* Harris.1841—*Aretia americana* HARRIS, Rep. Ins. Mass., p. 246.*race utahensis* Hy Edwards.1887—*Eup. caja* var. *utahensis* HY. EDWARDS, Ent. Amer., Vol. II, p. 166.*var. transmontana* Neumegen & Dyar.1893—*H. caja* var. *transmontana* NEUMEGEN & DYAR, Ent. News, Vol. IV, p. 214.*race opulenta* Hy. Edwards.1881—*Euprepia opulenta* HY. EDWARDS, Pap., Vol. I, p. 38.

Primaries and thorax dark brown with transverse anterior and transverse posterior and angular terminal white bands and two costal dots representing additional bands. A longitudinal band along submedian fold, often absent. Secondaries pale reddish to yellow with one or more discal and three large round submarginal blue-black spots. Abdomen reddish with dorsal black spots. Expanse, 55—65 mm.

Habitat, Europe and America.

The American forms differ in general from the European in lacking the longitudinal white band. The form *caja* with red secondaries inhabits the Pacific Northwest. Race *americana* inhabits the Northern Atlantic States. The race *utahensis*, from the Rocky Mountains region, differs in the broader white bands and yellow secondaries. It corresponds strictly to the form *wiskotti* Staud. from Asia Minor, differing in the character pointed out. The form *opulenta* from Alaska seems to be only a race of *caja* in which the white marks are enormously developed. The var. *transmontana* is more marked with white than *utahensis*, less so than *opulenta*.

Genus **Ectypia** Clemens.

1861—*Ectypia* CLEMENS, Proc. Acad. Sci. Phil. 1860, p. 529.

E. bivittata Clemens.

1861—*Ectypia bivittata* CLEMENS, Proc. Acad. Sci. Phil., 1860, p. 530.

1887—*Spilosoma nigroflava* GRAEF, Ent. Amer., Vol. III, p. 43.

White; patagia with luteous and black stripe. Abdomen with dorsal and lateral black spots and sub-dorsal orange yellow shade.

On primaries, a number of elongate black spots in three irregular rows; one spot on origin of vein 2 is somewhat arrow-shaped. Secondaries white. Expanse, 45 mm.

Habitat, Texas.

In this species the accessory cell may be absent as shown by the observation of Prof. J. B. Smith.

Family AGARISTIDÆ.

Synopsis of genera.

Veins 7—9 of primaries from a stalk at end of accessory cell.	
Antennæ of ♂ simple	Seudyra.
Antennæ of ♂ pectinated	Psychomorpha.
Vein 7 from accessory cell; veins 8 and 9 stalked.	
Antennæ swollen before tip	Alypia.
Antennæ filiform, serrate at pectinate.	
Vein 5 of secondaries distinct.	
Thorax not tufted.	
Wings narrow; body slender	Alypioides.
Wings broad, square at apices; color black	Pseudalypia.
Wings trigonate; body robust.	
Antennæ short, serrate; an enormous trifid frontal plate-like process	Eupseudomorpha.
Antennæ long, filiform; a frontal plate with lip-shaped outer margin	Copidryas.
Thorax with central scaled tuft.	
Antennæ filiform	Euthisanotia.
Antennæ pectinated	Ciris.
Vein 5 weak or absent	(Acherdoa in Liparidæ).

Genus **Seudyra** *Stretch.*

- 1875—*Seudyra* STRETCH, Cist. Ent., Vol. II, p. 19.
 1882—*Fenaria* GROTE, Papilio, Vol. II, p. 132; 1892—KIRBY, Cat. Lep. Het., Vol. I, p. 39.

S. sabulosa *Felder.*

- 1874—*Agarista sabulosa* FELDER, Reise der Novara, Vol. II, pt. 2, pl. CVII, f. 11.
 1874—*Eusemia ? sabulosa* BOISDUVAL, Rev. Zool., Vol. II, (3), p. 106.
 1892—*Metagarista ? sabulosa* KIRBY, Cal. Lep. Het., Vol. I, p. 41.
 1882—*Fenaria scvorsa* GROTE, Papilio, Vol. II, p. 132.
 1882—*Phagorista scvorsa* GROTE, Papilio, Vol. II, p. 189; 1883—Can. Ent., Vol. XV, p. 5.

Thorax reddish brown, with gray hairs. Fore wings reddish brown, uneven, shaded with blackish centrally. A reniform and orbicular discal dot outlined in dark brown. Beyond the former, a large sordid white space, showing faintly a narrow, arcuate, slightly waved, transverse-posterior line. Subterminal line blackish, undulate, obscure. Secondaries bright ochre yellow with a moderately broad, very even black border all around the outer margin. Abdomen smooth gray. Expanse, 27 mm.

Habitat, Arizona, California.

Genus **Psychomorpha** *Harris.*

- 1839—*Psychomorpha* HARRIS, Amer. Journ. Sci., Vol. XXXVI, p. 319.

P. epimenis *Drury.*

- 1780—*Noctua epimenis* DRURY, Ill. Ex. Ent., Vol. III, pl. 29, f. 2.

Black, sprinkled with blue scales. A large pale yellow patch on primaries covering the space from costa to near internal angle, indented at the end of the cell by the black reniform spot which, together with the orbicular one, are defined from the ground by the absence of blue scales. A large, ovate, submarginal, reddish patch on secondaries. Expanse, 20 mm.

Habitat, Atlantic States.

Genus **Alypia** *Hübner.*

- 1825—*Alypia* HÜBNER, Verz. bek. Schmett., p. 351.
 1873—*Androloma* GROTE, Bull. Buff. Soc., Vol. I, p. 30.

Synopsis of species.

Primaries with three yellow patches.

Spots divided by black veins.

Tibie of fore legs black **ridingsii,**

Tibie of fore legs orange.

Spots on secondaries white.

Outer spot on primaries narrow	mac-cullochii.
Outer spot on primaries broad, ovate	<i>race</i> lorquinii.
Spots on secondaries yellow	similis.
Spots not divided by the veins.	
Four patches, the outer spot divided	mariposa.
Three patches, outer spot complete, lunate	<i>var.</i> lunata.
Primaries with two patches.	
Secondaries with two spots.	
Spots of primaries yellow, of secondaries white.	
Without distinct costal enlargement on ♂ primaries.	
Spots well rounded.	
Basal spot of secondaries large, extensive	octomaculata.
Basal spot small, rounded	<i>var.</i> albomaculata.
Spots elongate, resembling transverse bands	wittfeldii.
With a distinct costal enlargement in ♂	disparata.
Spots all yellow	dipsaci.
Spots all white	brannani.
Secondaries with one spot, or rarely traces of a second	langtonii.

A. ridingsii Grote.

1864—*Alypia ridingsii* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 521.

Black, without costal swelling. Collar yellow at the sides. Fore tibiæ black, middle ones orange. Three yellow spots on primaries and two on secondaries, as in *mac-cullochii*; variable in size from small and well separated to large or even confluent. Expanse, 30 mm.

Habitat, Rocky Mountain region and mountains of California.

A. mac-cullochii Kirby.

1837—*Alypia mac-cullochii* KIRBY, Faun. Bor. Amer., Vol. IV, p. 301.

race lorquinii Grote & Robinson.

1868 *Alypia lorquinii* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 328.

Black. Costa of ♂ with a subhyaline enlargement. Fore and middle tibiæ orange. A basal triangular, round, discal spot and outer ovate yellow patch on primaries, divided by the veins. Two white patches on secondaries, separated by a large black discal dot, divided by the black veins. Patagia and two dots on collar covered by yellowish hairs. Expanse, 25 mm.

Habitat, Canada, Rocky Mountains.

A. similis Stretch.

1872—*Alypia similis* STRETCH, Zyg. and Bomb. N. A., p. 14.

1874—*Alypia edwardsii* BOISDUVAL, Rev. Zool. (3), Vol. II, p. 63.

var. conjuncta Hy. Edwards.

1883—*Alypia similis var. conjuncta* HY. EDWARDS, Pap., Vol. III, p. 34.

Closely similar to race *lorquinii*, but the spots larger, and those on secondaries yellow. Rarely the spots on primaries become partly confluent (var. *conjuncta*).

Habitat, California.

A. mariposa Grote & Robinson.

1868—*Alypia mariposa* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 329.

var. **lunata** Stretch.

1872—*Alypia lunata* STRETCH, Zyg. and Bomb. N. A., p. 15.

Black; collar yellow at the sides; tibiae as in *ridingii*. Fore yellow spots on primaries, the outer two before apex and internal angle respectively and sometimes united (var. *lunata*). Secondaries with a discal dot and outer yellow band, the latter obscurely cut by black veins. Expanse, 35 mm.

Habitat, California.

In this species, veins 7 to 9 arise from a short stalk from accessory cell.

A. octomaculata Fabricius.

1775—*Sesia octomaculata* FABRICIUS, Syst. Ent., p. 830.

1791—*Zygaena bimaculata* GMELIN, Syst. Nat., Vol. I (5), p. 2398.

1825—*Alypia quadriguttalis* HÜBNER, Verz. bek. Schmett., p. 351.

1887—*Alypia matuta* HY. EDWARDS, Pap., Vol. III, p. 33.

var. **albomaculata** Stoll.

1782—*Noctua albomaculata* STOLL, Pap. Ex. IV, pl. 345, f. C.

1810—*Alypia octomaculalis* HÜBNER, Zutr. Ex. Schmett., Vol. I, p. 22, ff. 119—20.

1825—*Agarista octomaculata* LATREILLE, Encycl. Méth., Vol. IX, p. 803.

Black, patagia and central dot of collar yellow, fore and middle tibiae orange. Two rounded yellow spots on primaries and two white ones on secondaries, the basal one much enlarged and reaching near to base of wing, or small and rounded (var. *albomaculata*). Expanse, 30 mm.

Habitat, Atlantic States.

A. wittfeldii Hy. Edwards.

1883—*Alypia wittfeldii* HY. EDWARDS, Pap., Vol. III, p. 34.

Black; fore and middle tibiae orange red, patagia yellow; two elongate, yellow, transverse patches on primaries, reaching from near margin to near costa, alternating with three patches of metallic blue scales. Two white spots on secondaries, slightly elongated transversely. Expanse, 35 mm.

Habitat, Florida.

A. disparata Hy. Edwards.1884—*Alypia disparata* HY. EDWARDS, Pap., Vol. IV, p. 13.1887—*Alypia gracileuta* GRAEF, Ent. Amer., Vol. III, p. 41.1892—*Alypia desperata* KIRBY, Cat. Lep. Hel., Vol. I, p. 35.

More slender than *wittfeldii*, with narrower, more pointed primaries. Costal margin distinctly swollen and sub-hyaline. The markings are like *wittfeldii*, but the spots are more rounded as in *var. albomaculata*. Expanse, 35—38 mm.

Habitat, Texas, Mexico.

A. dipsaci Grote & Robinson.1868—*Alypia dipsaci* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 326.

Black; patagia pale yellow; anterior and middle tibiae orange. Two yellow rounded spots on each wing. Expanse, 28 mm.

Habitat, California.

A. brannani Stretch.1872—*Alypia braunni* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 8.

Black; patagia yellow, costa concave as in *ridingsii*. Two white rounded spots on each wing. Expanse, 33 mm.

Habitat, Sierra Nevada of California.

A. langtonii Couper.1865—*Alypia langtonii* COUPER, Can. Nat. (2), Vol. II, p. 64.1868—*Alypia sacramenti* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 327.1884—*Alypia hudsonica* HY. EDWARDS, Pap., Vol. IV, p. 43.

Black; anterior and middle tibiae orange, patagia yellow. Two oval or rounded triangular spots on primaries and a single one on secondaries, pale yellow, or sometimes whitish, with a patch of metallic blue scales between them, more or less distinct. Sometimes traces of a second sub-basal spot on secondaries. Expanse, 35 mm.

Habitat, Canada, mountains of New England and New York and the Pacific coast:

Genus **Alypioides** Grote.1883—*Alypioides* GROTE, Trans. Kansas Soc., Vol. VIII, p. 46.**A. crescens** Walker.1856—*Eusmia ? crescens* WALKER, Cat. Brit. Mus., pt. VII, p. 1774.1869—*Agarista groti* BOISDUVAL, Ann. Soc. Ent. Belg., Vol. XII, p. 70.1883—*Alypioides flavilinguis* GROTE, Trans. Kans. Soc., Vol. VIII, p. 46.

Black; tongue orange, collar spotted with yellow; two yellow spots in the cell and a large ovate one beyond, alternating with patches of blue scales. Secondaries with a single, rounded, yellow patch. Expanse, 40 mm.

Habitat, California to New Mexico.

Genus *Pseudalypia* Hy. *Edwards*.

1874—*Pseudalypia* Hy. EDWARDS, Proc. Cal. Acad. Sci., Vol. V, p. 101.

P. crotchii Hy. *Edwards*.

1874—Hy. EDWARDS, Proc. Cal. Acad. Sci., Vol. V, p. 101.

var. atrata Hy. *Edwards*.

1884—Hy. EDWARDS, Papilio, Vol. IV, p. 121.

Head, thorax, patagia and abdomen deep glossy black, with a slight bronze tinge. Collar, base of palpi and abdominal tuft, golden orange. Palpi, golden orange beneath. Primaries, glossy black, a greenish metallic tinge. The costa for about three-fourths of its length and a narrow, slightly curved band crossing the wing beyond the middle, cream white. Apical edge of fringe white. Secondaries dull black with a slightly brownish hue. Fringe cream white except toward anal angle where it is black. Under side similar to upper with the band of primaries more broadly defined, and with a whitish tinge toward their base. Expanse, 22 mm. The variety is entirely brassy black except costa, which is narrowly cream white.

Habitat, Southern California.

Genus *Eupseudomorpha* Dyar.

1893—*Eupseudomorpha* DYAR, Can. Ent., Vol. XXV, p. 28.

1880—*Edwardsia* NEUMEGEN, Can. Ent., Vol. XII, p. 67.

1892—*Edwardsia* KIRBY, Cat. Lep. Het., Vol. I, p. 36.

E. brillians *Neumegen*.

1880—*Edwardsia brillians* NEUMEGEN, Can. Ent., Vol. XII, p. 67.

Black; patagia and collar pale yellow centrally. On primaries, are an ovate orbicular and reniform spot, ocher yellow. A sub-terminal brick-red band preceded by a bluish white one. Three white marks alternating with the discal spots and adapted to their shape: two bluish white marks in interspace between vein 1 and median vein, divided by an oblique black line. Fringe white. Secondaries immaculate. Below, on primaries, part of the marks are reproduced in ocher. Expanse, 35 mm.

Habitat, Texas.

Genus *Copidryas* Grote.1876—*Copidryas* GROTE, Can. Ent., Vol. VIII, p. 99.*C. gloveri* Grote & Robinson.1868—*Euschirrhopterus gloveri* GROTE & ROBINSON, Trans. Am. Ent. Soc. Phil., Vol. II, p. 185.

Primaries white; thorax, a narrow costal border reaching nearly to apex, and a very broad border along outer and internal margins, dark gray. Reniform and orbicular spots gray, outlined in black: a row of black terminal dots. Secondaries ocher yellow with outer gray border and terminal black line; fringes pale. Expanse, 35 mm.

Habitat, Texas.Genus *Euthisanotia* Hübner.1825—*Euthisanotia* HÜBNER, Zutr. Ex. Schmett., Vol. III, p. 12.1836—*Eubryas* BOISDUVAL, Spéc. gén. Lép., Vol. I, pl. 14, f. 9.* *Synopsis of species.*

Secondaries with complete marginal band.

No discal dot on secondaries **unio.**A distinct black discal dot above **brevipennis.**Secondaries with a partial marginal band, absent at apex, **grata.**Secondaries without a marginal band var. **sanctæ-johannis.****E. unio** Hübner.1825—*Euthisanotia unio* HÜBNER, Zutr. Ex. Schmett., Vol. III, p. 12.

White; head and center of thorax with a tuft of curled black scales. A dark purplish costal border two-thirds of length into, which are fused the partly obsolete reniform and orbicular spots. A broad, outer, brown border, edged within narrowly with olive green, and containing a neatly waved white line, shading inwards and enclosing some darker patches before the white line. On internal margin a triangular olive patch contiguous to the outer border and scattered with bluish scales. Secondaries yellow with marginal light brown border, neatly marked with dark brown narrow lunules. Expanse, 35 mm.

Habitat, Atlantic States westward.

E. brevipennis *Stretch.*

1874—*Eudryas brevipennis* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 151.

Close to *unio*, but the discal dots more distinct and the markings in the marginal band confused. On secondaries, a distinct black discal dot, the brown border evenly clouded, without any distinct marks. Expanse, 30 mm.

Habitat, California.

E. grata *Fabricius.*

1793—*Bombyx grata* FABRICIUS, Ent. Syst., Vol. III, p. 457.

1874—*Eudryas assimilis* BOISDUVAL, Rev. Zool. (3), Vol. II, p. 59.

var. **sanctæ-johannis** *Walker.*

1856—*Eudryas stæ. johannis* WALKER, Cat. Brit. Mus., pt. IX, p. 144.

Larger than *unio*, the marking all very dark brown, with bluish white, indistinctly geminate, subterminal line on primaries. Triangular patch on internal margin large, its olive border spreading toward the centre of the wing (occasionally largely obscuring the white ground color, *var. sanctæ-johannis* [?]). Secondaries yellow, the brown marginal band fading out before apex, marked with an obscure pale bluish line. Expanse, 50 mm.

Habitat, Atlantic States westward.

Genus **Ciris** *Grote.*

1863—*Ciris* GROTE, Proc. Ent. Soc. Phil., Vol. II, p. 65.

C. wilsonii *Grote.*

1863—*Ciris wilsonii* GROTE, Proc. Ent. Soc. Phil., Vol. II, p. 65.

Snow white; head, collar, and centre of thorax, metallic blue-brown; an olive green costal shade fused to a reniform and discal spot. An outer border of purplish brown containing a neatly undulate, irregularly geminate, terminal line and bordered within with olive green. This tint obtains along internal margin, ending in a projection upward near base of wing. On secondaries, a deep brown patch at anal angle. Expanse, 45 mm.

Habitat, Texas.

Family PERICOPIDÆ.

Synopsis of genera.

Accessory cell present	Daritis.
No accessory cell.	
Veins 7 - 10 of primaries stalked from apex of cell	Composia.
Vein 10 from the sub-costal	Gnophæla.

Genus **Daritis** Walker.

1855—*Daritis* WALKER, Cat. Lep. Brit. Mus., pt. III, p. 618.

1870—*Dorimonia* BOISDUVAL, Lep. Guat., p. 98; 1892—*Kirby*, Cat. Lep. Het., Vol. I, p. 186.

D. thetis Klug.

1836—*Euprepia thetis* KLUG, Neue Schmett., p. 6, ff. 12.

var. howardi Hy. Edwards.

1887—*Daritis thetis* var. *howardi* HY. EDWARDS, Ent. Amer., Vol. II, p. 165.

Thorax black, with pale yellow triangular mark on patagia. Abdomen brick red above with dorsal black line. Primaries black with pale yellow discal mark and longitudinal band from base sending three branches to internal angle, middle of outer margin, and costa before apex respectively, all divided by the black veins. Secondaries ocher, with red border enclosing intervenular blue spots: all the markings bordered with black and separated by black veins. A large black discal spot. Expanse, 95 mm.

Habitat, New Mexico.

Genus **Composia** Hübner.

1822—*Composia* HÜBNER, Verz. bek. Schmett., p. 179.

1870—*Cocastrea* BOISDUVAL, Lep. Guat., p. 88.

C. fidellissima Herrich-Schäffer.

1866—HERRICH-SCHÄFFER, Corr. Blat. Regensb., Vol. XX, p. 131; 1890—DVAR, Ent. News., Vol. I, p. 105; 1890—FRENCH, Ent. News., Vol. I, p. 153 (as *C. olympia*); 1892—KIRBY, Cat. Lep. Het., Vol. I, p. 190.

Black, with a strong blue reflection in the basal and outer part of cell of fore wing and basal two-thirds of hind wing. A bright red patch on base of costa, trisected by two black spots. A row of unequal rounded white spots border both wings outwardly, supplemented by two abbreviated rows, running from the costal edge of fore wing, obliquely outward. There are several small whitish dots on the thorax, and the abdomen is shining blue above. Expanse, 55 mm.

Habitat, Cuba, Florida.

Genus *Gnophæla* Walker.1854—*Gnophæla* WALKER, Cat. Brit. Mus., pt. 11, p. 330.1863—*Omoiala* GROTE & ROBINSON, Proc. Ent. Soc. Phil., Vol. 11, p. 334.1865—*Callalucia* GROTE, Proc. Ent. Soc. Phil., Vol. IV, p. 315.*Synopsis of species.*

Hind wings largely pale	vermiculata.
Hind wings with moderate pale spots.	
Spots whitish, elongate; wings narrow	<i>var. discreta.</i>
Spots pale yellow, abbreviated	latipennis.
Hind wings black	clappiana.

G. vermiculata Grote & Robinson.1863—*Omoiala vermiculata* GROTE & ROBINSON, Proc. Ent. Soc. Phil., Vol. 11, p. 334.1881—*Gnophæla continua* HY. EDWARDS, Pap., Vol. I, p. 80.*var. discreta* Stretch.1878—*Gnophæla hopfferi* *var. discreta* STRETCH, Surv. W. 100th Mer. Wheeler, p. 802.1884—*Gnophæla arizona* FRENCH, Pap., Vol. IV, p. 20.1885—*Gnophæla morrisoni* DRUCE, Biol. Centr. Amer. Lep. Het., Vol. I, p. 116, pl. 12, f. 7.

Black, with the whole central area of both wings, except the veins and a large discal dot, very pale yellow. The discal spot may extend down obliquely to internal angle, or the basal half of the cell may be filled in with black (*var. discreta*). Expanse, 45—50 mm.

Habitat, Rocky Mountain Region to Mexico; Pacific North West.

G. latipennis Boisduval.1852—*Glaucopis latipennis* BOISDUVAL, Ann. Soc. Ent. Fr. (2), Vol. X, p. 320.1868—*G. hopfferi* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. 11, p. 332.

Black; sides of collar and chest orange. On fore wing are three or four sub-apical intervenular pale yellow spots, and three larger ones on the disk, which are separated only by the median vein and vein 2. Secondaries similar, the sub-apical spots two in number, and the middle of the three discal ones much reduced in size. Expanse, 50 mm.

Habitat, Pacific States to Mexico.

G. clappiana Holland.1891—*Gnophæla clappiana* HOLLAND, Ent. News., Vol. 11, p. 156.

Black, with a quadrate pale yellow spot at end of cell and three small oval spots below apex; a minute white spot at base. Fringe of secondaries white.

Habitat. Colorado [Holland].



Family LIPARIDÆ.

Synopsis of genera.

Costa of primaries convex.

Antennæ of ♂ pectinated to the tip.

Female wingless or with rudimentary wings **Notolophus.**

Female with well developed wings.

Vein 5 of secondaries distinct:

Accessory cell present.

Abdomen tufted at base with metallic scales **Olene.**

Abdomen untufted **Dasychira.**

No accessory cell **Porthetria.**

Vein 5 of secondaries weak or absent **Acherdoa.**

Antennæ of ♂ pectinated for the basal two-thirds only **Dyaria.**

Costa of primaries concave.

Accessory cell present; veins 7—9 stalked **Aon.**

Genus **Notolophus** *Germar.*

1812—*Notolophus* GERMAR, Syst. Gloss. Prodr., p. 35.

1866—*Micropterygyna* RAMBUR, Cat. Léop. Andalusie, p. 281 note.

1876—*Apterogynis* GUÉNÉE, Stat. Sci. d'Eure et Loire, p. 78.

Synopsis of species.

Secondaries with more or less of a red-brown tinge.

Both wings red-brown.

Fore wings nearly unicolorous **antiqua.**

Fore wings much paler centrally *var.* **badia.**

Fore wings only slightly reddish.

Secondaries reddish centrally.

Markings faint; size small **vetusta.**

Markings distinct; larger **gulosa.**

Secondaries with a very faint trace only of reddish **cana.**

Secondaries gray or blackish, without any red tint above or below.

Wings dark, heavily marked often tinged with ochereous **definita.**

Wings light gray, seldom heavily marked.

White spot near internal angle distinct **leucostigma.**

White spot obsolete, markings faint *var.* **obliviosa.**

N. antiqua *Linnaeus.*

1758—*Bombyx antiqua* LINNÆUS, Syst. Nat., Vol. I, p. 503.

1865—*Orgyia nova* FITCH, Rep. Ins. N. Y., Vol. VIII, p. 193.

var. badia Hy. Edwards.

1874—*Orgyia badia* HY. EDWARDS, Proc. Cal. Acad. Sci., Vol. V, p. 188.

♂ Rusty brown, with darker transverse anterior and transverse posterior and sub-terminal lines, the latter obscure, but a very distinct bright, white spot before internal angle. Reniform discal spot faintly outlined. In the variety *badia* the basal space and space from trans.-post. line to margin is heavily shaded with blackish brown. Expanse, 25—30 mm.

Habitat, Canada and Northern United States.

N. vetusta Boisduval.

1852—*Orgyia vetusta* BOISDUVAL, Ann. Ent. Soc. France, Vol. X, p. 322.

Blackish brown or gray with a red tinge, the markings obscured. White spot present, but not very large. Secondaries blackish brown with a darker border. Expanse ♂, 20—25 mm.

Habitat, Coast region of California.

N. gulosa Hy. Edwards.

1881—*Orgyia gulosa* HY. EDWARDS, Papilio, Vol. I, p. 61.

1893—*Orgyia gulosa* DYAR, Psyche, Vol. VI, p. 438.

Fore wings gray, slightly tinged with brown. Markings very distinct; reniform spot pale, outlined by a brown ring; veins indicated by dark scales. Secondaries reddish centrally with a blackish border. Expanse, 25 mm.

Habitat, Coast region of California.

N. cana Hy. Edwards.

1881—*Orgyia cana* HY. EDWARDS, Papilio, Vol. I, p. 61.

1892—*Orgyia cana* DYAR, Psyche, Vol. VI, p. 203.

Smooth dark gray, the lines black broad, well defined. Reniform outlined in brown and filled in with yellowish. Subterminal line white, the white mark above internal angle small, crescent shaped, or obsolete. Secondaries blackish tinged with brown, uniformly colored.

Habitat, Sierra Nevada of California.

N. definita Packard.

1864—*Orgyia definita* PACKARD, Prot. Ent. Soc. Phil., Vol. III, p. 332.

Dark gray, often tinged with dull ochreous along internal margin and subterminal space; lines black, heavily marked; subterminal line whitish; white spot variable sometimes obsolete. Between transverse posterior and subterminal lines, there are usually a series of black longitudinal shades crossing the transverse

posterior line opposite the reniform. Secondaries uniformly blackish with a red tinge. The ♀ is uniformly sordid white.

Habitat, Northern Atlantic States.

N. leucostigma *Abbott & Smith.*

1797—*Phalæna leucostigma* ABBOTT & SMITH, Lep. Ins. Ga., Vol. II, pl. 79.

1832—*Cladophora leucographa* GEYER, Zutr. Ex. Schmett., Vol. IV, p. 33.

1856—*Orgyia intermedia* FITCH, 2d rept. nox. ins. N. Y., p. 213.

1856—*Orgyia borealis* FITCH, 2d rept. nox. ins. N. Y., p. 213.

var. obliviosa Hy. Edwards.

1886—*Orgyia obliviosa* Hy. EDWARDS, Ent. Amer., Vol. II, p. 13.

1890—*Orgyia inornata* BEUTENMÜLLER*, Psyche, Vol. V, p. 300.

Pale slate gray; markings moderate or obsolete, white spot well defined or absent. Secondaries uniformly brownish gray, varying in shade from pale to dark.

Habitat, Atlantic States westward.

Genus **Olene** *Hübner.*

1823—*Olene* HÜBNER, Zutr. Ex. Schmett., Vol. II, p. 19; 1883—MOORE, Lep. Ceylon, Vol. II, p. 95.

1855—*Nioda* WALKER, Cat. Brit. Mus., pt. V, p. 1069.

1855—*Rilia* WALKER, Cat. Brit. Mus., pt. V, p. 1075.

1864—*Parorgyia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 332.

1869—*Turriga* WALKER, Char. Lep. Het., p. 15.

Synopsis of species.

Markings of primaries entirely obscure, secondaries brownish. **cinnamomea.**

Markings black or partly so; secondaries gray or blackish.

Wings sparsely irrorate with black scales, lines distinct, especially t. p.

No distinct white discal patch on primaries: dark shade beyond t. p. line not reaching to terminal line, fading out and ill defined outwardly with a whitish edge.

A longitudinal black bar along s.-m. fold **achatina.**

This bar absent *var. tephra.*

A distinct white discal patch on primaries, and dark shade reaching to t. line, sharply defined outwardly, especially in a point between veins 6 and 7.

Veins not distinctly black lined.

Basal space gray and brown **leucophæa.**

Basal space with an ochereous patch *var. basiflava.*

Veins black lined *var. atrivenosa.*

Wings densely irrorate with black, pulverulent, all the markings

obscured, but discernible **plagiata.**

* The larva of this species described by me, is totally distinct from the well known *O. leucostigma* and not identical as considered by Mr. Dyar (Psyche, Vol. VI, p. 420).

WM. BEUTENMULLER.

(TO BE CONTINUED.)